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Before the
FEDERAL COMMUNICATIONS COMMISSION RECEIVED
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FEDERAL COMMUNICATIONS COMMISSION
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In the Matter of	
Amendment of Part 25 of the Commission's Rules to Establish Rules and Policies Pertaining to the Second Processing Round of the Non-Voice, Non-Geostationary Mobile Satellite Service	IB Docket No. 96-220

REPLY COMMENTS OF ORBITAL COMMUNICATIONS CORPORATION

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SUMMARY

As explained in these reply comments, there are several areas where a consensus among the commenters appears to have emerged, including the likely negative impacts of auctions for these inherently global little low-Earth orbit ("Little LEO") services, the benefits of reserving newly allocated spectrum for the pending applicants, and the absence of a need to require that the Little LEO satellite system operators determine the location of the user before allowing transmission of a message.

There are a few areas, however, where ORBCOMM disagrees with some of the other commenters. Several other commenters joined ORBCOMM in urging the Commission not to adopt the NPRM's proposal to now exclude the current Little LEO licensees from eligibility in the second processing round, while the "unaffiliated" second round applicants favored such a restriction. As ORBCOMM demonstrates in these reply comments, the second round applicants who supported the NPRM's tentative proposal have failed to justify adequately such an arbitrary and unlawful restriction. The claims are either unsupported, or supported by invalid market analyses. Indeed, those commenters failed even to include in their analyses the currently authorized foreign-licensed Little LEO systems. Moreover, as shown in its application and initial comments in this proceeding, the public interest would be well served by allowing ORBCOMM access to a small amount of additional spectrum. ORBCOMM thus renews its request that the Commission reject the tentative proposal to

limit the eligibility of current licensees in the second processing round.

As also demonstrated in these reply comments, ORBCOMM urges the Commission to dismiss Leo One's belated challenge to ORBCOMM's pending modification request to substitute 9.6 kbps subscriber downlinks for most of its 4.8 kbps subscriber downlinks. Satellite system operators need flexibility in their system designs to accommodate coordinations with other satellite systems.

Finally, ORBCOMM urges the Commission to reject Satellife's request for a set-aside of Little LEO capacity for humanitarian purposes, and to dismiss the attempts of several terrestrial radio service users to preclude non-interfering sharing by Little LEO satellite systems. These claims are not well founded.

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Orbital Communications Corporation ("ORBCOMM") hereby replies to some of the comments on the Federal Communications Commission's ("Commission's") proposed rules to govern the second processing round for the Non-Voice, Non-Geostationary ("NVNG") Mobile-Satellite Service ("MSS").[1/] As described in greater detail below, there are several areas where a consensus appears to have emerged, including the likely negative impacts of auctions for these inherently global little low-Earth orbit ("Little LEO") services, the benefits of reserving newly allocated spectrum for the pending applicants, and the absence of a need to require that NVNG satellite system operators determine

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[1/] Amendment of Part 25 of the Commission's Rules to Establish Rules and Policies Pertaining to the Second Processing Round of the Non-Voice, Non-Geostationary Mobile Satellite Service, Notice of Proposed Rulemaking, IB Docket No. 96-220, FCC 96-426, released October 29, 1996 (hereafter "NPRM").

the location of the user before allowing transmission of a message.

In contrast to this consensus, other commenters joined ORBCOMM in urging the Commission not to adopt the NPRM's proposal to now exclude the current Little LEO licensees from eligibility in the second processing round, while the "unaffiliated" second round applicants favored such a restriction. As ORBCOMM demonstrates herein, the second round applicants who supported the NPRM's tentative proposal have failed to justify adequately such an arbitrary and unlawful restriction. ORBCOMM thus renews its request that the Commission reject the tentative proposal to limit the eligibility of current licensees in the second processing round. Finally, as detailed below, ORBCOMM urges the Commission to ignore Leo One's belated and inaccurate challenge to ORBCOMM's pending modification request to substitute 9.6 kbps subscriber downlinks for most of its 4.8 kbps subscriber downlinks, to deny Satellife's request for a set-aside, and to dismiss the attempts of several terrestrial radio service users to preclude non-interfering sharing by Little LEO satellite systems.

I. Issues in Which There is a Consensus Among the Commenters in This Proceeding

A. Auctions Should Not be Used

As was demonstrated in ORBCOMM's comments in this proceeding, there are a number of compelling reasons why the NPRM's proposal to auction the NVNG satellite service licenses in

the case of mutual exclusivity is contrary to the public interest.[2/] Indeed, the NPRM acknowledges some of the difficulties that would arise in auctioning licenses for a satellite service that is inherently global in nature.[3/]

The commenters in this proceeding universally agree that auctions would be detrimental to the equitable and efficient use of available spectrum resources. Specifically, the nature of competitive bidding would produce added delays and uncertainties that would undermine the goal of early introduction of NVNG systems.[4/] In addition, auctions by the U.S. would likely provoke auctions in other countries, causing further delay and uncertainty, not to mention the potential for extortionist behavior.[5/]

Importantly, even the party best positioned financially to win at an auction in this proceeding opposes the NPRM's proposal to auction any segments where there is mutual exclusivity. As GE/Starsys observes in its comments, "NVNG is almost a case study in why auctions do not make sense."[6/] Indeed, without licenses in each country in which NVNG service is offered, providers will not be able to take advantage of the global nature of the service and will have little hope of

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2/ See ORBCOMM Comments at pp. 46-52.

3/ NPRM at ¶¶ 80-81.

4/ See Lockheed Martin Comments at p. 6.

5/ See Satellite Industry Association Comments, appended report entitled Public Harms Unique to Satellite Spectrum Auctions, at p. 17.

6/ GE/Starsys Comments at p. 23.

recovering their substantial investment. Moreover, incentives to negotiate sharing and coordination would be significantly reduced if countries viewed NVNG spectrum as a revenue source to be auctioned.[7/]

B. Newly Allocated Spectrum Should be Reserved

There is also agreement among the commenters that allocation of WRC-95 and WRC-97 Little LEO spectrum should be reserved to those entities that participated in obtaining additional spectrum at WRC-95 and are involved in the efforts to secure future spectrum. All commenters on this issue agree with the Commission that it has the authority to reserve spectrum and urge the Commission to do so.

For example, GE/Starsys commented that "the Commission has a clear obligation to give priority to the current applicants" for allocation of WRC-95 and WRC-97 spectrum, pointing out that it would be "patently unfair to permit free riding third parties" access to such spectrum.[8/] E-Sat also notes that "the Commission should reserve WRC-95 spectrum and any additional allocation obtained at WRC-97 for all current licensees and pending applicants in the NVNG Mobile Satellite Service."[9/]

[7/] See GE/Starsys Comments at pp. 23-24; VITA Comments at p. 9; CTA Comments at p. 28.

[8/] GE/Starsys Comments at p. 13.

[9/] E-Sat Comments at p. 15.

Other commenters agree that spectrum should be reserved, but suggest that the spectrum be reserved for the "unaffiliated" second round applicants. ORBCOMM believes there is no basis for their proposals to limit newly allocated spectrum to new second round applicants while excluding current licensees. CTA Commercial Systems contends that WRC-95 spectrum should be limited to second round applicants, not including current licensees, arguing that "second round licensees" should be rewarded for their efforts at WRC by allowing them exclusive use of WRC-95 spectrum.[10/] As justification for this position, CTA cites the Commission's acknowledgement that "second round Little LEO applicants were instrumental" at WRC-95 and notes that these applicants "expended significant resources" in seeking additional spectrum.[11/] CTA's reasoning, however, applies to all second round applicants, including ORBCOMM, which has made significant investments in developing an operational Little LEO system and has devoted enormous resources to assisting the U.S. government obtain additional spectrum at WRC-95.[12/] As a result, in addition to maintaining incentives for private sector investment and continued participation in obtaining future spectrum, the interests of fairness and equity require that current licensees

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[10/] CTA Comments at pp. 26-27.

[11/] Id.

[12/] See ORBCOMM Comments at pp. 2-7 for a description of ORBCOMM's extensive efforts in this area.

who have also contributed to obtaining spectrum at WRC not be precluded from obtaining WRC-95 and WRC-97 spectrum.[13/]

Final Analysis also agrees that the Commission should reserve WRC-95 and WRC-97 Little LEO spectrum and that the WRC-97 spectrum be reserved for existing applicants.[14/] They appear to propose, however, that WRC-95 spectrum only be allocated to second round applicants, which it earlier argues should not include first round licensees. Nevertheless, Final Analysis recognizes later in its comments that allocation of additional spectrum to "existing licensees" is "in the public interest where it allows existing licensees to meet growth in demand and accommodate potential future" technical changes.[15/] Furthermore, Final Analysis does not distinguish first round licensees from second round licensees and does not explain why they should not be allocated WRC-95 spectrum. Final Analysis does cite to the "substantial corporate resources" it has committed in support of

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[13/] CTA also argues that the Commission should not reserve spectrum for first round licensees on what CTA calls "speculative long-term projections." CTA Comments at p. 6. This claim, however, ignores the fact that all applicants, including CTA, base their demand estimates on projections that are no less "speculative" than ORBCOMM's. Indeed, ORBCOMM has demonstrated in its application the significant public interest advantages from a small amount of additional spectrum, including approximately a 50% increase or more in visibility in the Northern Latitudes, enhanced service to Alaska and the Continental United States, improved system capacity, greater system reliability and potential additional exports of services to Europe. See ORBCOMM Comments at pp. 17-18. These are significant benefits from only a small amount of spectrum, not what CTA claims are "limited economies of scale" that are "speculative at best." CTA Comments at p. 12.

[14/] See Final Analysis Comments at p. 31.

[15/] Final Analysis Comments at p. 30.

"U.S. efforts to obtain international allocations for additional Little LEO spectrum at international conferences,"[16] but this is equally true of other second round applicants, including ORBCOMM.

LEO One also believes the Commission should exercise its power to reserve spectrum and that "existing licensees should not be foreclosed from obtaining access to additional spectrum in the future."[17] However, it proposes that WRC-95 and WRC-97 spectrum first be allocated to "new NVNG MSS systems" and that existing licensees should be deemed eligible for additional allocations when the "markets for NVNG MSS services are determined to be competitive."[18] However, as demonstrated below, the Commission has already determined that the Little LEO market is competitive.[19]

C. Location Capabilities Should not be Mandated

ORBCOMM additionally observes that the initial comments reflect a consensus that the NPRM's tentative proposal to require a Little LEO satellite system operator to determine the location of a user before permitting a message to be transmitted is unnecessary and uneconomic.[20] The commenters agree with ORBCOMM

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[16] Final Analysis Comments at n. 57.

[17] Leo One Comments at pp. 37-38.

[18] Leo One Comments at p. 38. See also Leo One Comments at p. 20.

[19] See pp. 10-16 and 20, infra.

[20] E.g., Leo One Comments at pp. 66-69; Final Analysis Comments at p. 49; CTA Comments at p. 34; GE/Starsys Comments at pp. 27-28.

that the Commission need not adopt a mechanism involving precise determination of the user's location to ensure that transmissions be accepted only from countries that have authorized the Little LEO system to operate. Such a requirement would unnecessarily add significant cost to transceivers and would adversely affect system operations by requiring significant additional "overhead." Indeed, the recently concluded Policy Forum held in Geneva addressed this issue and determined such a requirement to be unnecessary.

II. The Commission Should Reject the Tentative Proposal to Now Exclude the Current Licensees from the Second Processing Round

In the NPRM, the Commission had tentatively proposed to impose a new restriction that would preclude the Little LEO first round licensees from obtaining access to additional spectrum in the second processing round. In its initial comments, ORBCOMM demonstrated that such a requirement was unjustified, bad policy and unlawful retroactive rulemaking.[21/] The second round applicants not affiliated with a current Little LEO licensee supported the tentative proposal. None of those comments, however, adequately justify such a restriction on the ability of ORBCOMM to enhance its Little LEO satellite system through the use of a small amount of additional spectrum to be obtained in this processing round.

21/ ORBCOMM Comments at pp. 9-33.

CTA supported the NPRM's tentative proposal, but provided little in the way of additional justification or support. In seeking to prove that only Little LEO satellite systems should be considered within the relevant market for purposes of the NPRM's structure-conduct-performance ("SCP") analysis, CTA included some vague estimates of Little LEO, Big LEO and geostationary ("GEO") satellite system costs.[22/] Those unsubstantiated CTA estimates fail to reflect the relevant incremental or marginal costs, and merely include CTA's guesses as to prices. CTA also claims that excluding first round licensees would minimize the likelihood of mutual exclusivity and thereby eliminate the need for auctions.[23/] ORBCOMM does not believe that such a consideration is relevant to the Commission's determination of how to maximize the public interest.

E-Sat likewise favors the tentative proposal, but without providing any independent analysis or support.[24/] E-Sat suggested one additional variation, proposing that the second round applications of the Little LEO licensees not be dismissed, but instead would remain pending so that if additional allocations occurred at WRC-97, the first round licensees might then be provided access to additional spectrum. As ORBCOMM explained in its initial comments, however, satellite system operators need to plan many years in advance, and such planning cannot rationally occur where critical factors (such as the

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[22/] CTA Comments at p. 9.

[23/] CTA Comments at p. 2.

[24/] E-Sat Comments at p. 16.

amount or locations of the spectrum) are unknown.[25] Moreover, unless the additional spectrum is immediately adjacent to the current NVNG frequencies in the 137-138 MHz and 148-150.05 MHz bands, ORBCOMM could not as readily make use of that spectrum for its current satellite system.

The other two "unaffiliated" second round applicants provided somewhat more extensive comments in support of the tentative proposal, but as shown below, those comments are no more valid. Both Leo One and Final Analysis purport to include in their comments a market analysis modeled after the NPRM's SCP paradigm.[26] Those analyses, however, suffer from the same flaws as the SCP analysis in the NPRM that ORBCOMM addressed in its initial comments.[27]

Ironically, both Leo One and Final Analysis seemingly recognize that an SCP analysis is unreliable when applied to a nascent industry such as Little LEOs, because of the absence of objective relevant information.[28] Notwithstanding this

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[25] ORBCOMM Comments at p. 20.

[26] Leo One Comments at Appendix A; Final Analysis Comments at Exhibit 1.

[27] See generally, ORBCOMM Comments at pp. 21-33.

[28] See, e.g., Leo One at p. ii and p. 8: "Although factual determinations at this stage of the NVNG MSS industry are necessarily subjective, ... "; Leo One at p. 10 and Boulton Appendix A at p. 3: "While factual determinations at this early stage in the life of this industry are necessarily subjective ..." Final Analysis at p. 8: "In fact, the current status of the Little LEO industry as an emerging market does not necessarily lend itself well to formal SCP modeling." Final Analysis Exhibit 1 at p. 1: "It has not been possible, however, to construct a formal SCP model because in such an emerging market as the Little LEO industry, data for many of the necessary (continued...)

acknowledgment that there is an insufficient basis for relying on an SCP analysis, both commenters purported to conduct such an analysis. ORBCOMM continues to believe that an SCP analysis will not provide any reliable information, since the output is entirely dependent on the guesses, speculation and subjective input of the modeler.

ORBCOMM disagrees with many of the assumptions or characterizations of the market used by Leo One and Final Analysis in their market analyses attempting to support their claim that the Little LEO market is not sufficiently competitive. First, none of the unaffiliated second round applicants even included in their market analyses any of the foreign-licensed Little LEO satellite systems.[29/] As ORBCOMM indicated in its

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[28/] (...continued)
input parameters simply do not exist." Final Analysis Exhibit 1 at p. 2: "Thus, although there are valid projections, there are no real world measures of supply and demand of many of the most important Little LEO applications."; Final Analysis Exhibit 1 at p. 3: "Traditional formal SCP model, normally applied to determine degrees of competition and/or concentration in mature markets, is not very applicable [to] such a nascent market as Little LEO service, with very unformed supply and demand characteristics." Final Analysis Exhibit 1 at p. 10: "The true substitutability of any of these services is a combination of the technical characteristics of the service (including quality and availability) and price features. Many of these technical and price features cannot yet be known."

[29/] See, e.g., Final Analysis Comments at p. 4 (assertion of a monopoly ignores the currently licensed U.S. systems and the foreign-licensed systems); Final Analysis Comments at p. 7 and Exhibit 1 at p. 2 (assertion of only two Little LEO systems ignores the foreign-licensed systems); Leo One Comments Boulton Appendix A at p. 6 and Tables 1, 2 and 4 (ignores foreign-licensed Little LEO satellite systems). See also, CTA Comments at p. 13 (statements concerning only two licensees ignores foreign-licensed Little LEOs). But, cf., Final Analysis Exhibit 1 at p. 3 (apparently acknowledging that there will be additional entry by foreign-licensed Little LEOs).

initial comments, the French and Russians have already authorized Little LEO satellite systems (S80-1 and GONETS, respectively), and a number of other countries are also considering authorizing additional Little LEO satellite systems that are at varying stages of development.[30/] Such foreign-licensed systems should be factored into any market analysis for purposes of this proceeding, particularly in light of the fact that the United States has taken the position in the World Trade Organization talks (as well as in its DISCO II rulemaking) that global satellite systems should have access to all markets.[31/]

ORBCOMM further believes that the proffered market analyses of Leo One and Final Analysis are also flawed because of their failure to include GEO and Big LEO satellite systems as participants in the markets in which Little LEO satellite systems will compete.[32/] These "unaffiliated" second round applicants contend that the Big LEO and GEO satellite systems are unlikely to offer services comparable to those that will be offered by the Little LEO satellite systems. Such claims appear to be incorrect, at least given the evidence available to date. Inmarsat has developed its Inmarsat D+ service using GEO satellites to provide services similar to the Little LEOs, and Globalstar has indicated an intent to offer messaging services

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30/ ORBCOMM Comments at pp. 22-23.

31/ See also Iridium Comments at p. 4.

32/ See, e.g., Leo One Comments Boulton Appendix A at pp. 13 and 20; Final Analysis Comments Exhibit 1 at p. 10. See also, CTA Comments at p. 10.

over its Big LEO constellation that will be akin to the Little LEO offerings.[33/]

CTA asserts that the different networks that have developed for terrestrial wireless data services and cellular service demonstrate by analogy that Big LEOs and Little LEOs can exist side-by-side without being substitutes for each other.[34/] To the contrary, that analogy demonstrates that Big LEOs should be considered competitors, insofar as cellular systems offer digital packet data services in direct competition with the wireless data networks.[35/] ORBCOMM also believes that PCS offers an analogy of relevance to this issue, where here in Washington, D.C., Sprint Spectrum advertises that its PCS service combines voice and paging functionality into a single unit. Thus, these analogous terrestrial wireless markets cited by Leo One actually

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[33/] See, e.g., Loral's Convertible Preferred Equivalent Obligations Offering Memorandum, dated November, 1996, at p. 62 ("In addition to supporting voice services, the Globalstar System is also expected to function as a worldwide paging and alphanumeric messaging service."). Thus, Leo One's claim that an earlier Globalstar Form S-1 Registration Statement's failure to explicitly mention ORBCOMM is proof that the Big LEOs will not be competitors (Leo One Comments Boulton Appendix at p. 22) is misleading and inaccurate.

[34/] CTA Comments at p. 10.

[35/] In a somewhat related vein, Leo One's market analysis expert also relies on a cellular service analogy, asserting that "Even a large increase in wireline prices would not induce large numbers of customers to switch to exclusively cellular service." Leo One Comments Boulton Appendix at p. 14. Such an assertion runs counter to the Commission's expectations as reflected in its decision allowing cellular carriers to offered fixed services. Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Service, 11 FCC Rcd 8965 (1996). In addition, such an assertion is inconsistent with the business plans of many of the PCS providers, who anticipate offering their wireless services in competition with wireline carriers.

demonstrate that competition can be expected between "robust" systems and more narrowly tailored systems.

In support of its claim that Big LEOs should not be considered competitors to Little LEOs, Leo One relies upon statements in an ORBCOMM private placement memorandum (i.e., a non-public document) concerning the differences between Big LEOs and Little LEOs.[36/] As ORBCOMM acknowledged in that document, there are some differences with respect to the frequencies to be used and the "circuit" nature of the Big LEOs that may provide some advantages to Little LEOs. However, Leo One ignored other highly relevant language in ORBCOMM's Offering Memorandum. In that same document, ORBCOMM also indicated:

> The Company expects that potential competitors will include other Little LEO satellite systems and may include Big LEO and GEO satellite systems and, in some cases, terrestrial messaging and data systems. ... Big LEO and GEO systems are designed primarily to provide two-way voice services that require larger, more complex satellites and require a circuit-oriented connection over their network to transmit even short messages, which significantly increases their per-message cost. If, however, the operators of these systems seek to offer services similar to those offered by the ORBCOMM system, price competition could be intense.[37/]

In sum, the market analyses proffered by Leo One and Final Analysis are significantly flawed because they fail to fully consider the effects on the expected competitiveness of the

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[36/] Leo One Boulton Appendix A at n. 15, citing ORBCOMM's Offering Memorandum at p. 34.

[37/] See ORBCOMM Prospectus dated December 12, 1996, at pp. 23-24. ORBCOMM had used identical language in its non-publicly available Private Offering Memorandum that was cited by Leo One. ORBCOMM Offering Memorandum, August 2, 1996, at p. 20.

market that will be created by foreign-licensed Little LEOs, Big LEOs and GEO satellite systems.[38/]

ORBCOMM believes that once all the proper alternatives are considered, the Commission can expect the relevant marketplace to be sufficiently competitive that it need not now automatically exclude the first round licensees from the current processing round. Indeed, as GE/Starsys observes in its initial comments, the Commission relied upon an SCP analysis to conclude that two cellular carriers comprise a sufficiently competitive market so as to justify preemption of state regulation of those markets.[39/] Final Analysis in its market analysis indicates that adding a third competitor has a significant effect on price/cost margins.[40/] Likewise, the Commission recently indicated that three air-to-ground service competitors comprised a competitive marketplace so that no assumption concerning anticompetitive behavior could be made.[41/] Even without any new Little LEO systems authorized in this processing round, the marketplace in which Little LEOs will compete will consist of well more than three entrants, including ORBCOMM, Starsys, the French S80-1 Little LEO system, and the Russian GONETS Little LEO system, as well as four Big LEO systems, Inmarsat's GEO system, and several

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[38/] In addition, for some areas, terrestrial services will compete with the Little LEOs. See ORBCOMM Comments at pp. 25-27.

[39/] GE/Starsys Comments at p. 10.

[40/] Final Analysis Comments Exhibit 1 at p. 15.

[41/] JET-TEL Group Limited Partnership, Order, DA 96-2061, released December 9, 1996 at ¶ 15.

regional GEO MSS systems (including AMSC and TMI in North America).[42/]

ORBCOMM believes that the record thus reflects the fact that although Little LEO satellite systems have not yet been deployed fully, it is expected there will likely be a very competitive marketplace even with only the currently authorized systems. Therefore, there is no need for the Commission to now automatically exclude the first round licensees from this processing round. As Leo One acknowledges, increasing the number of competitors does not necessarily equate to increasing the amount of competition,[43/] and that will be true particularly where, as here, the market will be competitive even without the addition of yet more entrants.

[42/] Interestingly, Leo One asserts that with respect to several markets (defined by the need for timeliness of transmissions), Leo One will be the only company capable of providing service. See, e.g., Leo One Boulton Appendix A at p. 19. Leo One, however, apparently contends that it will be a benevolent monopolist, using its monopoly profits to fight off ORBCOMM's supposed strategic or predatory pricing. Id. ORBCOMM is confused as to why, if Leo One is a monopolist, the public interest would be enhanced, but that it would be counter to the public interest if ORBCOMM purportedly was a monopolist. At any rate, Leo One's seeming inconsistency is irrelevant, since ORBCOMM will offer services to time-sensitive markets and face competition from several sources, notwithstanding Leo One's erroneous assertions to the contrary. Indeed, ORBCOMM was puzzled to see Leo One's economic expert opine on the technical capabilities of ORBCOMM's satellite system (e.g., Leo One Boulton Appendix A at n. 1), because that economic expert's Curriculum Vitae did not reflect any satellite engineering training or expertise. In addition, ORBCOMM disagrees with Leo One's economic expert in his self-appointed role as a psychic, claiming to divine ORBCOMM's motivation as merely attempting to sell hardware. Leo One Boulton Appendix A at n. 12.

[43/] Leo One Comments at p. vi and Leo One Boulton Appendix at p. 40. See also GE/Starsys Comments at p. 9.

ORBCOMM has some additional specific concerns with the Leo One market analysis. ORBCOMM believes that Leo One's market analysis contains so many defects that the Commission should ignore the conclusions drawn by Leo One. First, as discussed above, even without considering Big LEOs and GEO satellite systems, the analysis fails to include all of the presently authorized Little LEO systems, since it excluded the French and Russian Little LEO systems from its calculations. Thus, the market is likely to be significantly less concentrated than painted by Leo One, regardless of how many additional systems are licensed in this processing round.

Second, the Hirshman-Herfindahl Index ("HHI") analysis that makes up the "heart" of that study is based on an overly simplistic, "static" model of the market. Because there is no actual data available (given the infancy of the Little LEO industry), the Leo One HHI model simply assumes that market share will equate to capacity. ORBCOMM does not believe that the markets behave in such a fashion, as evidenced by its significant marketing activities underway at present.

In addition, Leo One's HHI model capacity calculations also apparently ignore foreign-licensed Little LEO systems and assume that the total Little LEO capacity is fixed and unchanging. ORBCOMM anticipates that additional Little LEO capacity will increase both through additional allocations and through the use of more efficient modulation techniques.[44/]

[44/] Indeed, ORBCOMM has been able to increase the efficiency of its satellite system design since its first proposal to the (continued...)

Moreover, Leo One's analysis postulates a scenario reflecting the failure of Starsys to launch,[45] but then seemingly assumes the Commission would simply allow that spectrum to lie fallow and not authorize a new licensee to use those frequencies. In sum, Leo One's HHI numbers are nothing more than meaningless attempts to add a patina of "economic analysis" to Leo One's unfounded and inaccurate characterizations of the marketplace in which Little LEO satellite systems will compete.

III. The Public Interest Will be Advanced By Granting ORBCOMM Access to a Small Amount of Additional Spectrum

Some of the "unaffiliated" second round applicants assert that the Commission should not assign any additional spectrum to the first round licensees because the Little LEO licensees have not yet fully used the spectrum already awarded to them.[46] CTA asserts that assigning additional spectrum to the

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[44] (...continued)
Commission in 1990 through better modulation techniques, and most recently, through the use of fewer, higher capacity subscriber downlinks. ORBCOMM's most recent advancement, as reflected in its pending modification request to substitute 9.6 kbps downlinks, results in the use of 12.5% less spectrum (280 kHz vs. 320 kHz).

[45] Leo One Comments at p. 14.

[46] E.g., CTA Comments at p. 12. CTA likewise asserts at p. 7 that the first round applicants have had ample opportunity to develop, construct and launch their systems. CTA's assertion fails to take into account the fact that it takes several years to design, construct and launch a Little LEO satellite system. Indeed, the only reason ORBCOMM has been able to deploy its initial two satellites as rapidly as it has after Commission licensing is because ORBCOMM was willing to undertake, at its own risk, significant efforts (and the expenditure of funds in excess of $50 million) while its application was pending.

current licensees based on "speculative" long term projections would amount to warehousing.[47] CTA, like the NPRM, fails to explain why the first round licensees' demand forecasts are any more "speculative" than the demand forecasts of the "unaffiliated" second round applicants. Satellite systems inherently involve long range planning in light of the significant lead times for licensing, designing, constructing and launching satellite systems.

E-Sat claims that the Commission has a policy of not assigning additional spectrum or orbital locations to applicants who had not fully implemented their initial authorized systems.[48] E-Sat is wrong in making this claim. The Commission recognizes the need for planning satellite systems many years in advance of actual deployment, and permits incumbent licensees to obtain additional capacity, even if they have vacant orbital positions. Section 25.140(g) refers to the number of additional orbital locations that an existing licensee may be assigned under certain specified conditions, and allows for some expansion capacity if it has "no more than two unused orbital locations for previously authorized but unlaunched satellites."[49]

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[47] CTA at p. 7.

[48] E-Sat Comments at n. 26.

[49] 47 C.F.R. § 25.140(g). Final Analysis' discussion of the Commission's "open skies" policy likewise ignores the Commission's Rules permitting incumbents to obtain additional slots even when they have unlaunched authorized slots. See also, Hughes Communications Galaxy, Inc., Order and Authorization, DA 96-1940, released November 21, 1996 at ¶ 11, addressing the Commission's policy of permitting incumbent satellite system operators to obtain expansion capacity.

Iridium, which has no direct stake in the Little LEO proceeding, was sufficiently concerned with the Commission's proposal to limit the eligibility of the first round licensees that it filed comments in response to the NPRM. As Iridium observes, because of the long-range nature of satellite system planning, it would disserve the public interest if the Commission established a policy effectively prohibiting expansion by incumbent operators.[50/] Iridium also observed that such a restriction was unnecessary insofar as the Commission had already determined that the marketplace in which Little LEO systems will compete will be competitive.[51/]

The "unaffiliated" second round licensees also included unfounded assertions regarding the benefits that would accrue from allowing ORBCOMM access to a small amount of additional spectrum. Final Analysis asserts that there would be no measurable public benefit in terms of wider availability or lower prices of Little LEO services from allowing the incumbents access to additional spectrum.[52/] In its second round modification request, as well as its initial comments in this proceeding, ORBCOMM demonstrated the multiple public interest benefits that would result from its obtaining access to a small amount of additional spectrum.[53/]

[50/] Iridium Comments at pp. 2-5.

[51/] Iridium Comments at pp. 3-4.

[52/] Final Analysis Comments Exhibit 1 at p. 16.

[53/] See generally, ORBCOMM Comments at pp. 17-21. ORBCOMM had sought access to the Transit band (149.9-150.05 MHz) for its
(continued...)

CTA disputes ORBCOMM's claims that there will be improvements in its system design and reliability from a small increase in spectrum, claiming that system reliability is a function of good systems engineering and the selection of spacecraft and launch vehicles.[54] CTA's assertions are incorrect. The additional spectrum will allow ORBCOMM to launch additional satellites, thereby increasing the constellation's coverage and availability in the Northern Latitudes. In addition, a 48 satellite constellation will also result in an increase in the number of ORBCOMM satellites potentially in view to users in CONUS at any point in time, thereby reducing line-of-sight infringement. Finally, the more robust constellation will also lessen any potential coverage gap problems if there is a failure of a satellite.

Finally, Leo One claims that allowing ORBCOMM to enhance its satellite constellation will merely "fortify a non-competitive market structure."[55] ORBCOMM disagrees with this characterization. As detailed above and in ORBCOMM's initial comments, ORBCOMM will be facing competition from a number of domestic and foreign sources. Moreover, assigning ORBCOMM additional spectrum in the 137-138 MHz and 149.9-15.05 MHz bands

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[53] (...continued)
gateway operations (50 kHz) and also for subscriber uplinks on a non-exclusive basis using its DCAAS techniques. ORBCOMM had additionally requested use of 90 kHz of downlink spectrum in the 137-138 MHz band to add satellites to its constellation (although ORBCOMM expects to reduce that request for downlink spectrum in its revised application to be filed in response to the NPRM).

[54] CTA Comments at p. 12.

[55] Leo One Comments at p. 20.